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ABSTRACT

A study was conducted in which bibliometric techniques were applied to a collection of journal articles to identify the most important journals publishing information in the field of early childhood education. Specifically, 242 journals included in ERIC's "Current Index to Journals in Education (CIJE)" were identified and assigned to core or peripheral categories of importance. This grouping was then examined to determine whether the information followed the bibliometric regularity observed in the literature of other disciplines. Bradfordian regularity in the distribution of articles across journals was demonstrated. In addition, the distribution of published articles across time (1969-82) was analyzed to pinpoint quantitative trends in publication and to predict possible future trends. With ERIC descriptors, an analysis was made of topics most frequently appearing in the literature. It was found that, across this same time period, 216 descriptors were used 30 times or more to index the articles cited in "CIJE" and an additional group of documents cited in "Resources in Education." These 216 descriptors thus provided a general idea of the content of recent early childhood education literature. (RH)

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CHARACTERISTICS OF THE JOURNAL LITERATURE IN EARLY CHILDHOOD EDUCATION

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As the number of professionals working on behalf of the care, development, and education of young children increases, the published information related to early childhood education continues to expand. A literature is a body of thought expressed in published writings; a publication can be defined as anything in the form of text. Thus, the literature of early childhood education consists of journal articles, books of all types, dissertations, and a plethora of fugitive materials such as conference papers, research reports, curriculum guides, and the like. Although all types of literature in early childhood education are important sources of information, this discussion concentrates on the analysis of the journal literature because, since their inception in the 17th century, journals have been widely regarded as premier sources in carrying the new ideas and concepts in a field and reflect the major mechanism for transmitting and evaluating knowledge (Meadows, 1980).

An increasingly important collection of journal literature related to early childhood education has emerged, particularly within the last 10 years. This discussion addresses a number of issues related to journals as the primary conveyors of the information and state of the art in early childhood education. First, bibliometric techniques are applied to a collection of journal articles to identify the most important journals publishing information on early childhood education. Second, the journal article collection is examined to determine whether the production of information follows the same bibliometric regularity observed for the literature of other disciplines. Third, the time distribution of the published journal articles is analyzed to pinpoint quantitative trends in past publication and to predict possible future trends in the production of information. Finally, a general analysis is conducted, using descriptors employed by the Educa-

tional Resources Information Center (ERIC) database, to ascertain topics that appear frequently in the early childhood education literature.

Specifically, the first three sections of the discussion describe the development of the collection of journal articles and the bibliometric analysis of the journals producing these articles. The fourth section analyzes the temporal distribution of the journal articles and offers some suggestions on past and future trends in publication. To determine current topics that appear frequently in the early childhood literature, the fifth section presents an exploratory analysis based on the descriptor postings from ERIC's computerized information database.

Developing the Collection of Journal Articles

The use of published literature to indicate information activity in a discipline falls under the heading of bibliometric analysis (Narin, 1976). Such analysis has gained great popularity, particularly within the past two decades as abstracting and indexing services have grown to handle the information explosion and as the contents of such indexes have been organized into computerized, machine-readable bibliographic databases. Potter (1981) states that bibliometrics is "the study and measurement of the publication patterns of all forms of written communication and their authors" (p. 5). Bibliometric methods have good validity because the data studied are an unobtrusive record that can be analyzed unrelated to subjective opinion and bias.

To develop the collection of early childhood education journal articles, ERIC's Current Index to Journals in Education (CIJE) computer tape database was searched through the services of the Educational Research Service and Computing Center of the Faculty of Education at the University of British Columbia. This search produced articles that had been assigned

the term Early Childhood Education as a major descriptor. In the Thesaurus of ERIC Descriptors (Educational Resources Information Center, 1982), the term Early Childhood Education is defined as "activities and/or experiences that are intended to effect developmental changes in children, from birth through the primary units of elementary school (Grades K-3)" (p. 71). The descriptor first appeared in the ERIC Thesaurus in 1966. CIJE provides good overall coverage of the education-related literature and systematically monitors and announces the information published in approximately 800 journals. Computerized databases like CIJE are good sources for bibliometric studies because the articles included have been uniformly indexed according to agreed-upon lexicographical definitions and because the retrieved items conform directly to the formulated search question. Thus, content is systematically controlled in indexing and retrieval, and high relevance can be attained in searching. Depending on content, up to six major descriptors are assigned to each article. Searching under major descriptors, which index only the primary focus or subject of a document, insures that only the most relevant documents related to the topic of the search are retrieved (Educational Resources Information Center, 1974).[1]

The computer search yielded 1,424 journal articles posted to the major descriptor Early Childhood Education in CIJE from 1969 through the first quarter of 1983.[2] The articles were hand-sorted by journal title and also were tabulated by their date of publication.

Identifying the Most Important Journals

If the journal literature on a topic for a particular time period is searched and the retrieved articles are tabulated, a pattern emerges in which the journals can be ranked by the volume of articles each produces.

Looking more closely at the results of the computer search revealed that one journal contributed 170 articles and that 110 journals contributed only one article each. The distribution of articles over journal titles is presented in Table 1. Journals are ranked from those contributing the greatest number of articles to those contributing only one or two articles each.

Insert Table 1 about here

The first column in Table 1 gives the rank of the journal, the second column indicates the cumulative percentage of journals, and the third column records the number of articles contributed by each journal. From the figures in the third column, it is apparent that the number of articles contributed by each successive journal decreases rather rapidly. The bottom-ranked 155 journals, producing one or two articles each, have been truncated to conserve space in the table. (The 45 journals ranked 89 through 132 contributed two articles each, and the 100 journals ranked 133 through 242 contributed one article each.)

The fourth column reports the running total for the articles retrieved. The first line of this column shows 170 articles contributed by the first-ranked journal. The 308 articles indicated in the second line reflect the total number of articles contributed by the first- and second-ranked journals, and so on down the table. A total of 1,424 articles were contributed by the 242 individual journals.

To further clarify, a fifth column has been added to present the cumulative percentage of articles contributed by ranked journals. Figures in this column were created by dividing the number of articles in the

fourth column by the total number of articles. As these figures indicate, the first three journals contributed approximately one-fourth of the articles on this topic produced by the 242 journals for the period 1969-82. In addition, these three journals represented a very small percentage of the total number of journals.

If important journals are defined as those that contribute the highest volume of articles for a given period of time, Table 1 suggests that the first 31 journals would be of major importance.[3] These 31 titles produced approximately two-thirds, or 954, of the articles published during this time period. The titles and their publication counts are represented in Table 2.

Insert Table 2 about here

These journals represent a wide range of disciplines, cover many special interests, and vary markedly in terms of their research or practical content.

Bradfordian Characteristics of the Journal Literature

Bibliometric analyses of collections of journal literature in many disciplines have established the existence of certain patterns of regularity in the publication of information. This regularity is characterized by the concentration and dispersion of items of information over different sources: in this instance, the dispersion of the 1,424 articles across the 242 journals. On any given topic, a large number of relevant articles will be concentrated in a small number of journal titles. The balance of the articles will be dispersed over a large number of titles. The initial statement of this phenomenon was made by Bradford (1934, 1950), and Bradford's

Law has been found to operate in collections of journal literature from many disciplines (Garfield, 1980). For example, Asai (1981) assessed the characteristics of 11 different bibliographic databases, including from 68 to 534 source journals, and found that the distribution of articles over sources closely approximated that predicted by Bradford's Law. Brookes (1977) suggests that this pattern operates for even small collections of journal titles. Summers (1983) recently reported Bradfordian characteristics in the field of reading, as based on a collection of 865 articles from 204 journals appearing in an annual summary of research on reading for 1979.[4]

If, following Bradford's Law, one takes a collection of journal articles on a topic and ranks the journals in decreasing order of productivity, the journal titles can be divided into three zones such that each zone contributes about the same number of articles. For example, using a collection of 1,332 articles from 326 ranked journals in applied geophysics, Bradford (1950) found that the first 9 titles contributed 429 articles, the next 59 titles contributed 499 articles, and the final 258 titles contributed 404 articles. The importance of this finding lies in the observed regularity. Specifically, a small "core" of highly productive journals produces one-third of the articles. To get the next third, one has to search five times as many titles, and to obtain the last third, one would have to search five times again as many titles. Thus, the relationship from zone to zone is geometric according to the following series (where 1 is the number of journals in the first zone and n is a proportional multiplier):

$$1 : n : n^2 \ldots n^{10}$$

Thus, journal literature collections demonstrated to be essentially Bradfordian in their distribution have a nucleus of high-producing journals, a

second zone of relatively high-producing journals, and a long tail of journals producing a very small number of articles.

Bibliometric regularity in early childhood education journals. The collection of early childhood education journal articles follows the bibliometric regularity of Bradford's Law, with Table 1 being divided into three approximately equal zones of 494, 460, and 470 articles. If Bradford's Law is operating as expected, the first zone should include 6 source journals, the second 24, and the third 96, using a proportional multiplier of 4 in the geometric progression. In reality, the number of source journals in the three zones is 6, 25, and 211. Thus, the results are close to those predicted for the first two zones and somewhat disproportional with respect to the third.[5] Results in this third zone are undoubtedly influenced by the high number of journals producing only one or two articles on the topic. It can be concluded that, at this stage in the development of early childhood education, the distribution of pertinent journal literature approximates the regularity of other areas, with considerable dispersion across the low-producing journals. These results are not surprising, but rather are typical of an emerging field such as early childhood education, in which a spurt of interest has come from many disciplines (behavioral psychology and cognitive development, to name but two). This distribution of literature also suggests the possibility that the field could, in the future, split into several strong subinterest areas, such as compensatory education, psychosocial development, and pedagogical practices.

Implications for retrieval. The results of this bibliometric analysis have important implications for retrieving information in early childhood education. Monitoring a small core of journals will allow one to keep abreast of much information, but a good deal of material will be scattered

across a wide variety of low-producing journals. The low-producing journals also have a tendency to change considerably year by year. It is almost impossible for individuals, and even libraries, to maintain adequate collections to cope with this scatter of journal literature. Thus, there is a definite need for services like ERIC's CIJE to provide access to information. Computerized retrieval, based on coordinate indexing and Boolean logic, enhances the information dissemination capabilities of such indexes. Activities by ERIC Clearinghouses to generate state-of-the-art reviews and synthesis papers on important topics in early childhood education also provide a valuable service for the field in light of the diversity of the available information.

To illustrate the problem of bibliometric scatter in retrieving information, journal titles were collated from the 38 articles posted to the major descriptor Handicapped Children in the collection of 1,424 CIJE articles.[6] The 38 articles appeared in 22 separate journals; 7 articles appeared in 3 journals located in the first zone, 11 articles appeared in 3 journals located in the second zone, and 20 articles appeared in 16 journals located in the third zone. The scatter would have been even greater if the search had not used the major descriptor designation. With dispersion like this and without the aid of services like those provided by ERIC, it would be very difficult for an individual to retrieve a reasonably complete collection of journal articles about handicapped children and early childhood education. The range of journals producing information on this one topic is staggering, including research and nonresearch journals, journals located in several countries and reflecting a wide variety of disciplines, and journals representing many interests and professional groups.

Temporal Distribution of the Journal Literature

Figure 1 is based on the data arising from the tabulation of publication dates for the 1,423 articles cumulated across the time period from 1969-82. There is a linear rise in articles published between 1969-72, with a sharp exponential increase to 1978 and a leveling off in publications from that point onward. The figure represents the logistic sigmoid S curve

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Insert Figure 1 about here

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typical of literature growth in developing specialties that encounter a sharp increase in interest. What is perhaps most notable about this figure is the dramatic doubling of literature production for the period 1974-78. The overall growth pattern approximates that outlined by Crane (1972), who suggests that a logistic pattern of growth in a discipline includes four dimensions: a slow beginning, exponential growth, linear growth, and continued slow irregular growth. A significant number of authors with interest in early childhood education entered the literature during the dramatic growth period of the middle and late 1970s.

It would be interesting to speculate as to the causes for the pattern of increase illustrated in Figure 1. Undoubtedly, broader interest in early childhood education--stimulated by societal concerns for children and sociological and political factors--has had its influence. The economics of recession and research and development funding patterns no doubt have played a role as well. It seems reasonable also to assume that the more recent leveling effect may be attributed to the same factors. It should be noted that the leveling effect may not be as sharp as indicated because some publications produced in the 1980s may not yet have entered the

ERIC system through CIJE at the time this search was made (in early 1983). However, even allowing for this possibility, there is a definite leveling off in production of articles after 1978.

It is interesting to speculate whether the growth curve for the future will follow this same logistic pattern. If literature production is maintained at the asymptotic values, it perhaps would indicate that the field of early childhood education has reached a mature stage where the level of interested individuals remains fairly stable and the related production of literature is somewhat constant. One could also predict a decline in the literature. However, a decline would be unlikely since it would suggest either that the problems in the field have been solved or that interest in solving these problems has declined. Most likely, this leveling effect is temporary, and increases in literature production will occur. Although the volume of such increases perhaps will never equal that of the 1970s' "golden age" of funding and activities, irregular linear increases, rather than exponential increases, will be typical. Exponential growth cannot be maintained indefinitely and, as the pace of innovation in an area of interest slackens, it can be observed that concomitant declines in literature production occur.

The question also arises as to whether or not the information growth in early childhood education literature is, in reality, a growth in knowledge per se. Undoubtedly, the knowledge base has also increased as information has expanded. Investigators have pointed out that, with an exponential increase in article production, there is a substantial probability that knowledge has also increased, although this increase is undoubtedly linear rather than exponential (Tague, Beheshti, & Rees-Potter, 1981). It has been suggested that in a body of literature the number of really significant

papers produced is roughly the square root of the total number of papers (Tague et al., 1981, pp. 126-127). Further investigation of this assertion would make interesting research, and a number of suggestions could be drawn from research in information science and the sociology of knowledge in developing a scale for rating the "significance" of a work.

Current Topics in the Journal Literature

The bibliometric discussion to this point has been largely statistical in nature. However, an important question arises as to the substantive content of the indexed articles and the general topics appearing in the recent early childhood education literature. An in-depth content analysis of the articles is outside the scope of this discussion. Nonetheless, an indication of general trends can be obtained by analyzing the ERIC descriptors used in indexing. The descriptors provide a framework for "sorting" the information contained in the ERIC materials. The framework is flexible because the documents can be assigned more than one descriptor depending on their content. In ERIC, an average of nine descriptors are assigned to each item indexed.

For this anlaysis, descriptor counts for the early childhood education articles indexed in CIJE were combined with those assigned to documents indexed in ERIC's other abstract publication, Resources in Education (RIE). Obviously, it would not be productive to analyze all the descriptors used. It seemed reasonable to include for analysis only those descriptors that had been used 30 times or more across the time period 1969-82. A total of 216 descriptors appeared 30 times or more and accounted for approximately two-thirds of all the postings made to the materials in the two ERIC indexes. The 216 descriptors were first empirically sorted and organized into clusters of reasonably related concepts. Then, 10 broad

categories were created to provide a general heading for the sets of descriptors. With this method, the major categories were essentially defined by the literature itself.

Table 3 presents the 10 categories with the appropriate descriptors ranked by the number of times they were posted in indexing the CIJE articles and RIE documents. The separate descriptors can be thought of

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Insert Table 3 about here

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as representing various subcategories within the broader categories. The classification appears reasonably valid and provides a useful framework that captures the general thrust and dimensions of the early childhood education journal and report literature. Heavy emphasis has been given to discussions of developmental characteristics, program development, and special needs of children. Also, the considerable volume of articles containing information on teaching and learning, measurement and evaluation, teachers, and parental concerns should be noted. A relatively small number of articles were assigned descriptors in the research category.[7]

An interesting analysis could be made of individual descriptors or groups of descriptors to determine the ebb and flow of interest in various topics across the 1969-82 time period. To accomplish this, the number of documents indexed to each descriptor would be broken down by date of publication to show how publications were distributed across the topics and time frame. A table would then be created to give predicted publication distributions in which predictors were based on knowledge of the subtotals for the topics and years. The equation used in this case would be the familiar formula used to calculate the contingency tables in the Chi-square statistical test. In order to measure the degree to which the observed

values deviated from the predicted values, standardized Z scores would be calculated. The greater the absolute value of Z, the greater the difference between the actual frequency of the topic and the predicted frequency. Such an analysis would allow a determination of changes in the pattern of topics appearing over time and would permit an estimation of which apparent changes in interest were due to chance factors and which were, in reality, true changes. Publication pattern anomalies would also be dramatically highlighted.

Summary and Conclusion

This discussion has examined characteristics of the journal literature in early childhood education indexed with the term Early Childhood Education as a major descriptor in ERIC's CIJE publication for the period of 1969-82. A body of 242 journals publishing articles on early childhood education were identified, and core and peripheral journals were defined according to their frequency of article publication. The Bradfordian regularity of the distribution of articles across journals was demonstrated, and related implications for effective retrieval of information were discussed. In addition, analysis of the temporal distribution of article publication revealed the approximate pattern of linear and exponential growth in article production that took place across the time period. Possible future trends in publication of information were discussed, and an empirical analysis of the ERIC descriptors used in indexing was conducted to highlight the various topics and issues consistently appearing in the recently published journal and report literature in early childhood education. Finally, some suggestions were made to guide further research to determine the statistical significance of the publication patterns observed in the analysis of ERIC index terms.

The results of the analysis have indicated the general characteristics of the journal literature and have illustrated the rather significant increase in interest in and publication of information which took place in the 1970s. No doubt the quantity, diversity, and complexity of the literature published on this topic will continue to increase as society pursues issues and opportunities and selects priorities in advocating improved education for young children in the 1980s. The published literature provides both the information base and the forum for pursuing future significant issues in early childhood education. It is hoped that the ideas explored in this paper will aid professionals in their understanding and use of the wealth of journal literature available to the field.

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FOOTNOTES

[1]The term Early Childhood Education is assigned by ERIC as a major descriptor when the subject of the document is that educational level (i.e., the field of early childhood education). This term may also be assigned as a minor descriptor to other documents relating to children from birth to age 9 that do not discuss the field of early childhood education in general but that might, for example, concern research, curriculum materials, or teaching methods associated with this age group. For more complete information on searching the ERIC database, see the latest edition of the Thesaurus of ERIC Descriptors (Educational Resources Information Center, 1984).

[2]An additional 1,218 journal articles were indexed with the term Early Childhood Education as a minor descriptor but were not included in this study.

[3]It should be noted that article productivity is only one measure of the importance of a journal. Importance could also be measured by subjective opinion contributed by members in the discipline who use the journals and by citation counts (Smith, 1981), to name but two other methods reported in the literature.

[4]A good description of both the theoretical and practical aspects of Bradford's Law can be found in Drott (1981).

[5]Drott (1981) presents several reasons why Bradford's Law is usually an approximation and seldom produces the exact predicted values. Several techniques have also been reported which can be used to statistically test the goodness of fit between the actual and predicted values. Among others, these include Chi-square, several approaches based on regression

analysis, and the Kolmogorov-Smirnov test. For our purposes, a general estimate of the goodness of fit is sufficient.

[6]The term Handicapped Children become an invalid descriptor as of March 1980 but still may be used to search for ERIC postings entered prior to that date. The descriptor Disabilities or narrower terms should be used to retrieve documents entered in ERIC after March 1980.

[7]After the introduction of a new publication type coding system in September 1974 for RIE and August 1979 for CIJE, the ERIC single-word descriptor Research became invalid for use except on documents that discussed research itself as a topic.

Table 1

Distribution of Articles by Source Journals for the Early Childhood Education Journal Literature

Journal Rank	Journal Cumulative Percentage	Articles	Cumulative Articles	Article Cumulative Percentage
1	.004	170	170	.119
2	.008	138	308	.216
3	.012	57	365	.256
4	.016	48	413	.290
5	.020	42	455	.319
6	.024	39	494	.346
7	.028	32	526	.369
8	.033	31	557	.391
9	.037	25	582	.408
10	.041	24	606	.425
11	.045	24	630	.442
12	.049	23	653	.458
13	.053	22	675	.474
14	.057	21	696	.488
15	.061	20	716	.502
16	.066	19	735	.516
17	.070	18	753	.528
18	.074	18	771	.541
19	.078	18	789	.554
20	.082	18	807	.566
21	.086	16	823	.577
22	.090	16	839	.589
23	.095	15	854	.599
24	.099	15	869	.610
25	.103	14	883	.620
26	.107	14	897	.629
27	.111	13	910	.639
28	.115	13	923	.648
29	.119	12	935	.656
30	.123	10	945	.663
31	.128	9	954	.669
32	.132	9	963	.676
33	.136	9	972	.682
34	.140	8	980	.688
35	.144	8	988	.693
36	.148	8	996	.699

Table 1, p. 2

Journal Rank	Journal Cumulative Percentage	Articles	Cumulative Articles	Article Cumulative Percentage
37	.152	7	1003	.704
38	.157	7	1010	.709
39	.161	7	1017	.714
40	.165	7	1024	.719
41	.169	6	1030	.723
42	.173	6	1036	.727
43	.177	6	1042	.731
44	.181	6	1048	.735
45	.185	6	1054	.740
46	.190	6	1060	.744
47	.194	6	1066	.748
48	.198	6	1072	.752
49	.202	5	1077	.759
50	.206	5	1082	.759
51	.210	5	1087	.763
52	.214	5	1092	.766
53	.219	5	1097	.770
54	.223	5	1102	.773
55	.227	5	1107	.777
56	.231	5	1112	.780
57	.235	4	1116	.783
58	.239	4	1120	.786
59	.243	4	1124	.789
60	.247	4	1128	.792
61	.252	4	1132	.794
62	.256	4	1136	.797
63	.260	4	1140	.800
64	.264	4	1144	.803
65	.268	4	1148	.806
66	.272	4	1152	.808
67	.276	4	1156	.811
68	.280	4	1160	.814
69	.285	4	1164	.817
70	.289	4	1168	.820
71	.293	4	1172	.823
72	.297	4	1176	.825
73	.301	3	1179	.827
74	.305	3	1182	.830
75	.309	3	1185	.832
76	.314	3	1188	.834
77	.318	3	1191	.836
78	.322	3	1194	.838
79	.326	3	1197	.840
80	.330	3	1200	.842
81	.334	3	1203	.844

Table 1, p. 3

Journal Rank	Journal Cumulative Percentage	Articles	Cumulative Articles	Article Cumulative Percentage
82	.338	3	1206	.846
83	.342	3	1209	.849
84	.347	3	1212	.851
85	.351	3	1215	.853
86	.355	3	1218	.855
87	.359	3	1221	.857
88	.363	3	1224	.859
89–132	.549	2(45x2)	1314	.922
133–242	1.000	1(110x1)	1424	.999

Table 2

Important Core Publications for Early Childhood Education

Journal	Articles
Young Children	170
Childhood Education	138
Day Care and Early Education	57
International Journal of Early Childhood	48
Instructor	42
Journal of Experimental Child Psychology	39
Elementary School Journal	32
Developmental Psychology	31
Teacher	25
Child Development	24
Compact	24
Science and Children	23
Phi Delta Kappan	22
National Elementary Principal	21
Australian Journal of Early Childhood	20
Children Today	19
American Education	18
Journal of Genetic Psychology	18
Education	18
Perceptual and Motor Skills	18
Theory into Practice	15
Educational Leadership	16
Children	15
Exceptional Children	15
Child Care Quarterly	14
Merrill-Palmer Quarterly	14
Grade Teacher	13
Educational Horizons	13
Educational Product Report	12
School Science and Mathematics	10
Elementary English	9

Table 3

Early Childhood Education Categories and Descriptor Usage

Age/Grade Level			
Preschool Children	338	Elementary School Students	78
*Preschool Programs	268	*Primary Grades	69
Preschool Education	262	Primary Education	66
Kindergarten	207	Nursery Schools	62
Elementary Education	142	Children	60
Kindergarten Children	107	Grade 1	52
Infants	111	**Preschool Learning	41
Preschool Curriculum	94	*Infancy	40
Early Experience	80		
Publication Types			
Instructional Materials	178	Guidelines	65
Literature Reviews	94	Teaching Guides	52
Curriculum Guides	85	Resource Materials	50
Annotated Bibliographies	83	Conference Reports	40
Bibliographies	80	*Resource Guides	32
Research			
Research	121	Research Projects	54
Educational Research	110	Research Needs	41
Longitudinal Studies	74	Data Collection	32
Research Methodology	66	Behavioral Science Research	31
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Developmental Characteristics			
Child Development	422	Motor Development	66
Cognitive Development	353	Sex Differences	64
Language Development	227	Cognitive Processes	62
Social Development	159	Childhood Needs	54
Self Concept	131	Perceptual Development	50
Play	112	Sex Role	49
Emotional Development	85	Values	43
Nutrition	79	Physical Development	41
Age Differences	75	Interpersonal Competence	37
Intellectual Development	73	Psychomotor Skills	36
Concept Formation	72	Developmental Stages	34
Skill Development	68	Developmental Psychology	31

Table 3, p. 2

Programs

Program Evaluation	403	He lth Services	59
Progra.n Descriptions	343	*Program Planning	58
*Day Care Services	209	Government Role	55
*Day Care Pro,rams	164	Federal Legislation	52
Program Development	132	State Programs	48
Federal Programs	126	Financial Support	47
**Child Care	123	Child Welfare	45
Program Effectiveness	104	Delivery Systems	42
*Compensatory Education Programs	95	Program Administration	40
		Experimental Programs	40
**Educational Programs	95	Policy Formation	39
*Child Care Centers	91	Educational Legislation	39
Home Visits	78	Cost Effectiveness	33
Demonstration Programs	77	Educational Finance	33
Home Programs	73	Needs Assessment	32
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Disadvantaged Youth	229	Cross Cultural Studies	38
**Handicapped Children	172	Socioeconomic Influences	38
**Exceptional Child Education	137	Disabilities	36
Foreign Countries	127	Educationally Disadvantaged	35
Bilingual Education	78	English (Second Language)	35
Compensatory Education	60	Cultural Differences	34
Special Education	52	*Exceptional Children	33
Low Income Groups	49	*Mentally Handicapped	33
Exceptional Child Research	48	Minority Groups	32
Learning Disabilities	44	American Indians	30
Mexican Americans	40		

Measurement/Evaluation

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Evaluation Methods	97	Screening Tests	42
Questionnaires	61	Classification	40
**Measurement Instruments	59	Achievement Tests	37
Classroom Observation Techniques	56	Testing	33
		Surveys	32
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Evaluation Criteria	48	Educational Assessment	31
Interaction Process Analysis	48	Formative Evaluation	30
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Learning Activities	192	Communication Skills	43
Educational Objectives	197	Learning Theories	42
Teaching Methods	177	Thought Processes	42
Models	139	Learning Readiness	41
Curriculum Development	127	Language Arts	40
Academic Achievement	125	Educational Television	38
*Teaching Techniques	116	Problem Solving	37
Educational Philosophy	89	*Regular Class Placement	37
Classroom Environment	87	Perceptual Motor Learning	37
Learning Processes	84	Curriculum Design	36
Environmental Influences	82	Memory	36
Educational Theories	80	Educational Diagnosis	36
Behavior Change	73	Learning Experiences	35
Reading Readiness	70	Beginning Reading	35
Individualized Instruction	62	Identification	34
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Behavioral Objectives	59	Basic Skills	34
Curriculum	59	Reinforcement	33
Objectives	58	Concept Teaching	33
Open Education	57	Art Education	33
Educational Innovation	53	*Performance Based Education	33
Educational Needs	53	Diagnostic Teaching	33
Educational Environment	52	Mathematics Education	32
Educational Change	51	Sex Stereotypes	32
Motivation	50	Peer Relationship	31
Science Education	48	Educational History	31
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Note. For current information on ERIC descriptor use, see the Thesaurus of ERIC Descriptors (10th ed.) (Educational Resources Information Center, 1984).

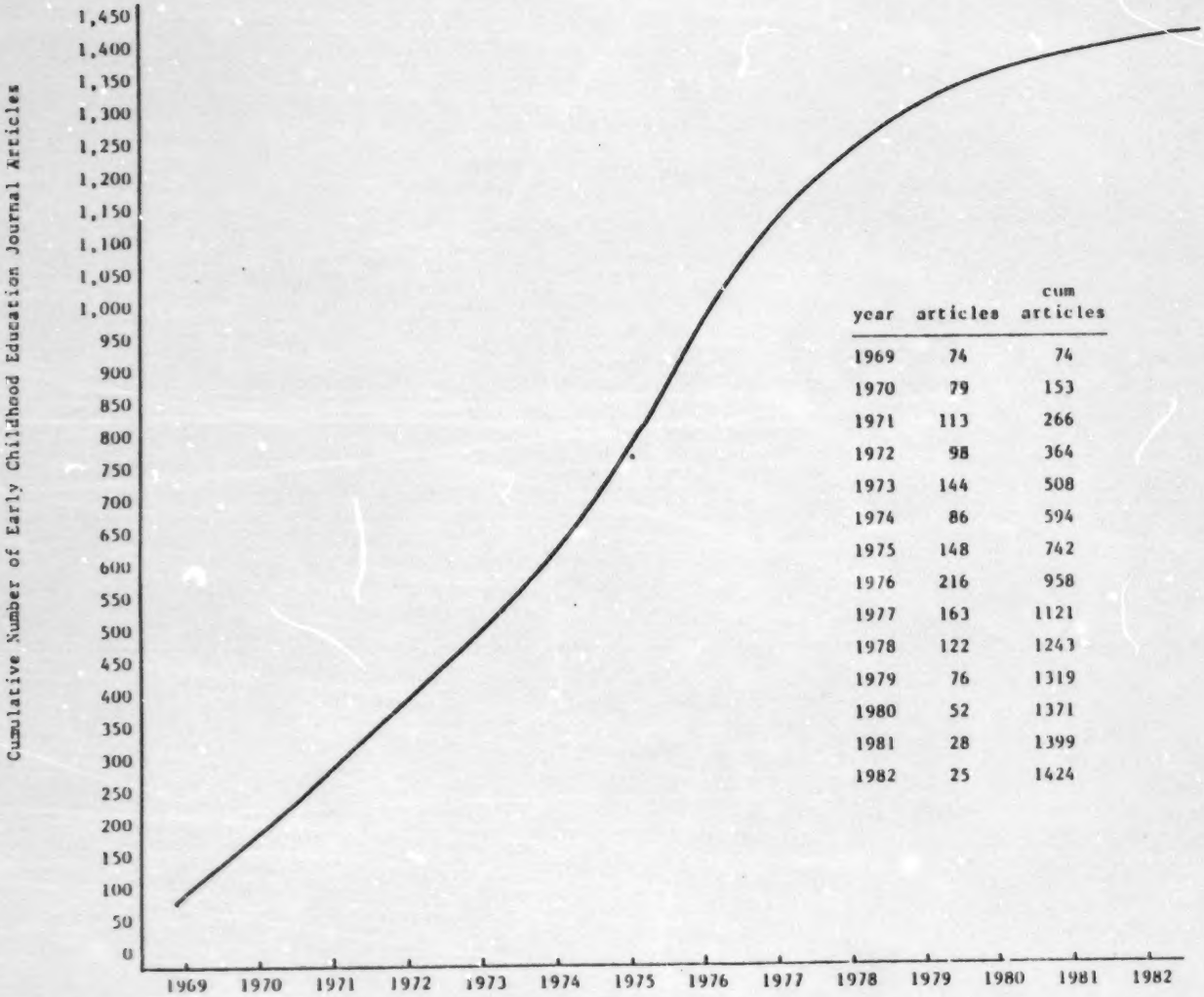
*These descriptors were downgraded by the ERIC Thesaurus to "use" references in 1980 (with the exception of Exceptional Children and Regular Class Placement, which were downgraded in 1978).

**These invalid (or "dead") descriptors are no longer used in indexing but may be used to search for database entries prior to September 1980.

FIGURE CAPTION

Figure 1. Cumulative growth of the early childhood education journal literature.

FIGURE 1



year	articles	cum articles
1969	74	74
1970	79	153
1971	113	266
1972	98	364
1973	144	508
1974	86	594
1975	148	742
1976	216	958
1977	163	1121
1978	122	1243
1979	76	1319
1980	52	1371
1981	28	1399
1982	25	1424

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